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Current status of biodiversity and health of the coral reef ecosystem of Palk Bay

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The coral reefs in Palk Bay run parallel to the shore between longitudes 79°17' E and 79°8' E, at the latitude 9°17' N. It lies in an east-west direction and is about 200 to 600 m away from the shore at different places at a depth of 1 to 5 m.

The western part of this reef which extends westward from Pamban Pass up to Thedai is called Velapertumunai reef and the eastern part which extends up to Pamban Pass is called Kathuvallimunai reef. Both the reefs of Palk Bay were surveyed to assess the biodiversity profile and health of corals and sponges. A drastic reduction in coral cover was found in both the reefs when compared with the results of the surveys conducted in 2004. The live coral cover of Velapertumunai reef declined from 44% in 2004 to 13.6% in 2008. In Kathuvallimunai reef, it declined from 37.8% to 12.9%. Massive corals were dominant in both the reefs in 2004 whereas in

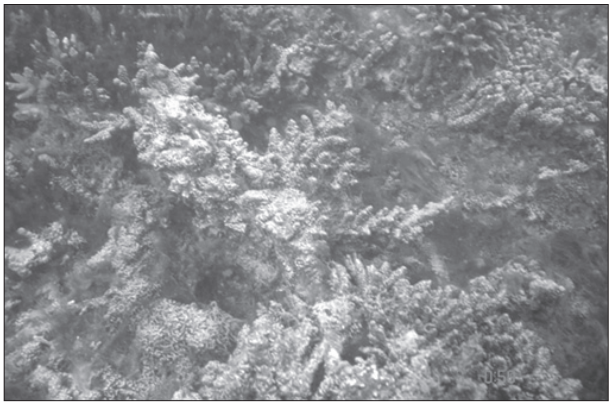

Fig. 1. Reef destroyed by overgrowth of macroalgae

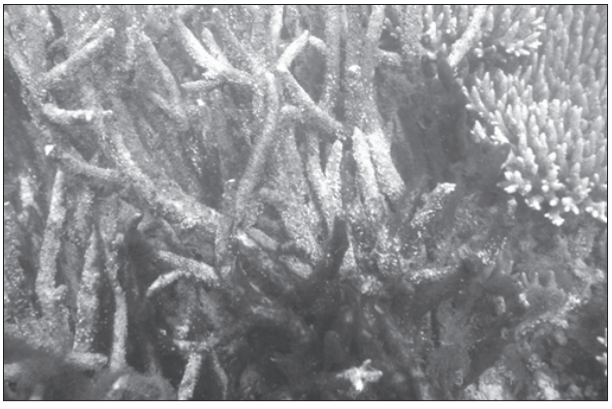

Fig. 2. Dead corals along with healthy colonies

2008, branching corals were found to be dominant. Underwater photographs were taken at locations where the surveys were carried out. In many places the corals were found dead, bleached or covered with sediments and seaweeds (Fig. 1 & 2). Patches of live *Acropora* sp., *Hydnophora* sp. and brain coral were also found in these places (Fig. 3, 4 & 5). In most places, visibility was poor due to siltation.

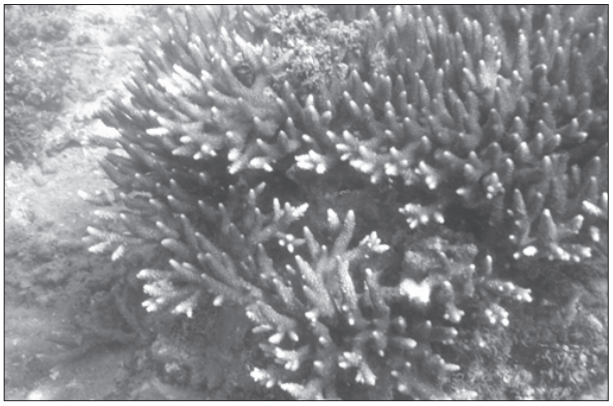

Fig. 3. Live *Acropora* sp.

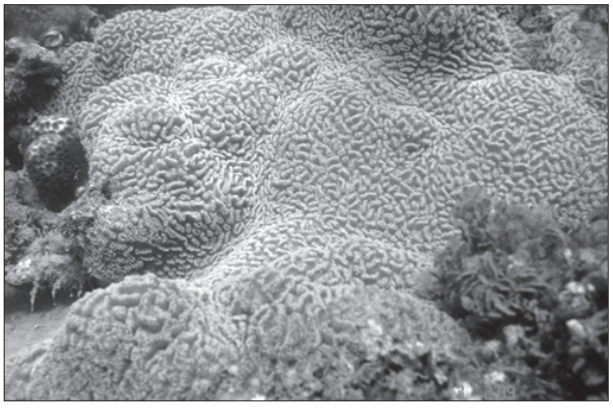

Fig. 4. Lush growth of *Hydnophora* sp.

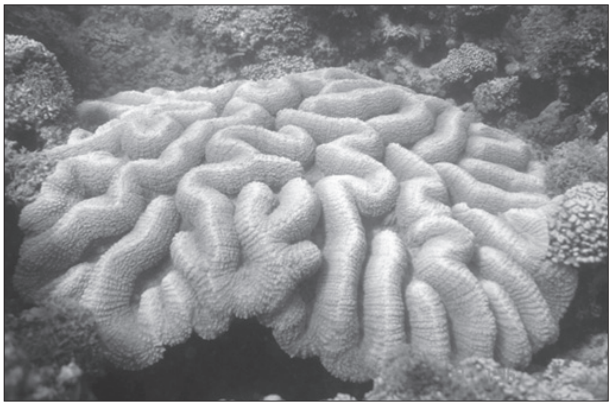

Fig. 5. Brain coral growing among coralline algae

The disease prevalence in hard corals was also studied. Massive corals were found to have more incidences of diseases than branching corals. Brown band syndrome (Fig. 6), *Porites* ulcerative white spot syndrome, pink line syndrome/*Porites* pinking (Fig. 7), *etc.* were noticed. In pink line syndrome, pink colouration was observed around the dead and scarred tissues in colonies of *Porites* spp. The development of pink colouration could be the symptom of a disease or simply a response of the coral to a variety of competitive, invasive or parasitic interactions including cyanobacteria. Samples were

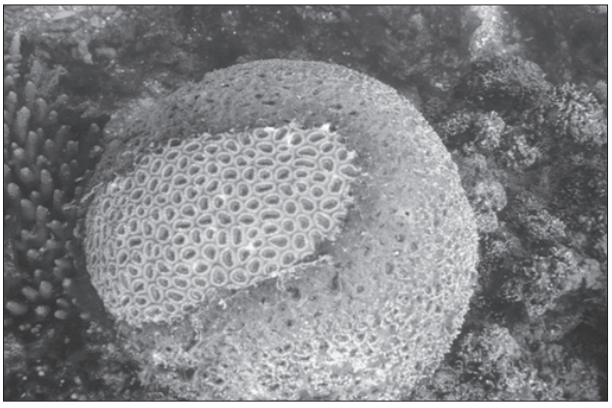

Fig. 6. Brown band syndrome in *Favia* sp.

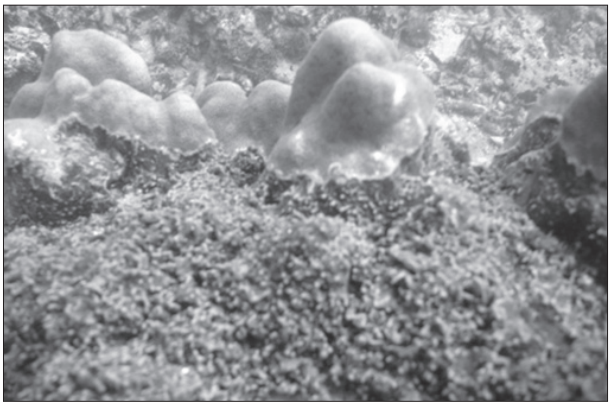

Fig. 7. Pink line syndrome/*Porites* pinking

collected for microbiological as well as histological investigations to understand the etiology of these disease conditions.

The surveys conducted also revealed that the sponge population in Palk Bay is highly diverse. The sponges exhibited a variety of shapes and colours. Generally, sponges were found to establish in patches in the intertidal zone, very close to the coral

Fig. 8. Sponges on sandy substratum

reef areas, on a sandy substratum (Fig. 8). However, there also existed many species among the corals, particularly growing on the dead corals and rocks. Majority of the sponges belonged to the class Demospongiae. Threats like siltation are of serious concern to the survival of sponges and it is therefore necessary to record and document the present sponge faunal diversity as a basic step towards protection of these highly valuable and pharmacologically important resource.